

Remarks

The Office Action dated November 1, 2002 and the Advisory Action dated February 3, 2003 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Subsequent to entry of this amendment, Claims 1-16 are pending in this application. Claims 1-4, 6-12, and 14-16 stand rejected. Claims 5 and 13 are withdrawn from consideration.

Submitted herewith is a Submission Of Marked Up Claims in accordance with 37 C.F.R. § 1.121(c)(1)(ii).

In accordance with 37 C.F.R. 1.136(a), a one month extension of time is submitted herewith to extend the due date of the response to the Office Action dated November 1, 2002, for the above-identified patent application from February 1, 2003, through and including March 3, 2003. In accordance with 37 C.F.R. 1.17(a), authorization to charge a deposit account in the amount of \$110.00 to cover this extension of time request also is submitted herewith.

The rejection of Claims 1-16 under 35 U.S.C. § 112, first paragraph is respectfully traversed.

Independent Claims 1 and 9 have been amended to delete the phrases referred to in the Office Action. Accordingly, Applicant submits that Claims 1-16 contain subject matter described in the specification in such clear, concise, and exact terms as to enable any person skilled in the art to make and use the invention, and meet the requirements of Section 112, first paragraph

For the reasons set forth above, Applicant respectfully requests that the Section 112, first paragraph, rejection of Claims 1-16 be withdrawn.

The rejection of Claims 1-16 under 35 U.S.C. § 112, second paragraph is respectfully traversed.

Independent Claims 1 and 9 have been amended to delete the phrases referred to in the Office Action. Accordingly, Applicant submits that Claims 1-16 are definite and particularly point out and distinctly claim the subject matter that Applicant regards as his invention.

For the reasons set forth above, Applicant respectfully requests that the Section 112, second paragraph, rejection of Claims 1-16 be withdrawn.

The rejection of Claims 1-4, 6, and 9-12 under 35 U.S.C. § 103(a) as being unpatentable over Dalke et al. (U.S. 5,519,746) is respectfully traversed.

Dalke et al. describe a fuel bundle assembly for a boiling water nuclear reactor (see Figures 4 and 5) that includes an open ended tubular channel subdivided into four quadrants by at least two interior partitions, each quadrant having a sub-fuel bundle assembly having a plurality of fuel rods extending between upper and lower tie plates. An inter-bundle support plate 40 is attached to the lower end of the channel and has four flow openings 54 at an upper end thereof. The lower tie plate 50 of each sub-fuel bundle is supported in a respective one of the openings 54 in the inter-bundle support plate 40. A single inlet opening 62 is located in the inter-bundle support plate 40. The four flow openings 54 are offset relative to the centerline of inlet opening 62. The sub-fuel bundles within a channel are separated by a cruciform shaped coolant passage. Inter-bundle support plate 40 is supported on a cup 42 fixed to the top of core plate P. Utilizing handles 90 attached to the upper end of the open ended tubular channel 16, the entire fuel bundle assembly 14, including the channel 16, the four sub-fuel assemblies 26 and the

support plate 40 can be lifted from the support cup 44 during refuel or repair procedures (see, Col. 5, lines 8-23 and Figures 1, 3 and 5).

→ Claim 1 of the present application recites a core plate assembly that includes a flat plate and a plurality of support beams with the flat plate positioned on top of the support beams. The assembly also includes a plurality of fuel supports extending through the flat plate. Each fuel support includes a coolant flow inlet, a coolant flow outlet sized to receive the lower tie plate of a fuel bundle, and a coolant flow bore extending between the coolant flow inlet and the coolant flow outlet. The coolant flow inlet is offset from the coolant flow outlet so that a centerline of the coolant flow inlet is parallel to a centerline of the coolant flow outlet.

→ Claim 9 of the present application recites a core for a nuclear reactor that includes a core plate assembly that includes a flat plate and a plurality of support beams with the flat plate positioned on top of the support beams. The assembly also includes a plurality of fuel supports extending through the flat plate. Each fuel support includes a coolant flow inlet, a coolant flow outlet sized to receive the lower tie plate of a fuel bundle, and a coolant flow bore extending between the coolant flow inlet and the coolant flow outlet. The coolant flow inlet is offset from the coolant flow outlet so that a centerline of the coolant flow inlet is parallel to a centerline of the coolant flow outlet.

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by modifying the teachings of the prior art to produce the claimed invention, absent some teaching, suggestions or incentive supporting the modification. In addition, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the

prior art so that the claimed invention is rendered obvious! Specifically, it is impermissible to

pick and choose from any one reference only so much of it as will support a given position, to

the exclusion of other parts necessary to the full appreciation of what such reference fairly

suggests to one of ordinary skill in the art. In this case, the Office Action suggests that it would

have been obvious to form the inter-bundle support plate 40 and the support cup 42 as a single

support unit. Applicant disagrees with this suggestion because Dalke et al. clearly describes at

Col. 4, lines 44-47, that the cup 42 is fixed to the core plate P and clearly describes at Col. 5,

lines 18-22, that the entire assembly 14 is lifted from the support cup 42 during refuel and repair

procedures (see also Figure 5). Also, Dalke et al. describe at Col. 2, lines 17-20, that the lower

section of the fuel channel has an attached inter-bundle fuel support to vertically hold the sub-

fuel bundles, and that each channel and inter-bundle fuel support serves as a basket for the four

sub-fuel bundles. Applicants submit that forming the inter-bundle support plate 40 and the

support cup 42 as a single unit would prevent the fuel assembly from being lifted from the

support cup as described and shown by Dalke et al. Particularly, it would prevent the fuel

assembly from being removed from the reactor because the support cup is fixed to the core plate

P. Specifically, because the inter-bundle support plate 40 is attached to the channel 16, and

because the handles are attached to the channel 16, the entire assembly 14 could not be lifted

from the reactor during refuel and repair procedures if the inter-bundle support plate 40 and the

support cup 42 is formed as a single unit and attached to the core plate P. Further, Applicants

submit that the suggestion in the Advisory action that the mating surfaces 78 and 80 shown in

Figure 5 would permit the fuel assembly item 14 to be removed from the reactor core is not

possible. The channel is attached to the inter-bundle support plate 40 which if formed integrally

with cup 42 and attached to the core plate P would also attach the channel 16 to the core plate P, thereby making it impossible to remove the fuel assembly 14 from the reactor using the handles 90 secured to the upper end of channel 16. Accordingly, Applicant submits that it would not be obvious to one skilled in the art to modify Dalke et al. as suggested in the Office Action.

Also, Applicant submits that Dalke et al. do not describe nor suggest a core plate assembly as recited in Claim 1 nor a core for a nuclear reactor as recited in Claim 9.

Particularly, Dalke et al. do not describe nor suggest a plurality of fuel supports extending through the flat core plate with each fuel support including a coolant flow inlet, a coolant flow outlet sized to receive the lower tie plate of a fuel bundle, and a coolant flow bore extending between the coolant flow inlet and the coolant flow outlet such that the coolant flow inlet is

offset from the coolant flow outlet. Rather, Dalke et al. describe a fuel assembly that is supported by a cup attached to the core plate. The cup has a coolant flow inlet, a coolant flow outlet, and a coolant flow bore extending between the coolant flow inlet and the coolant flow outlet. However, the coolant flow inlet and the coolant flow outlet are not offset from each other. Dalke et al. describe an inter-bundle support plate that includes a single inlet and four flow outlets that are offset from the inlet. But, Dalke et al. does not describe nor suggest that the inter-bundle support plate extends through the core plate. Rather, Dalke et al. describe that the inter-bundle support plate is supported by the cup (see Figures 4 and 5, and Col. 4, lines 44-55). Also, as shown in Figure 3, and described in Col. 2, lines 17-20, the inter-bundle support plate is part of the fuel assembly and not part of the core plate assembly.

Further, Dalke et al. does not describe nor suggest a plurality of support beams with the core plate P positioned on top of the support beams. The Office Action suggests that the support

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6  
cups 42 are "support beam type structures on top of the said plates". Applicant submits that if the support cups were the equivalent of support beams, the support cups are fixed to the top of the core plate and that the core plate is not positioned on top of these support cups. Accordingly, Applicant respectfully submits that Claims 1 and 9 are patentable over Dalke et al. ✓

Claims 2-4 and 6 depend from independent Claim 1 and Claims 10-12 depend from independent Claim 9. When the recitations of dependent Claims 2-4 and 6, and Claims 10-12 are considered in combination with the recitations of Claims 1 and 9 respectively, Applicant respectfully submits that Claims 2-4 6, and 10-12 likewise are patentable over Dalke et al. ✓

For the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 1-4, 6, and 9-12 be withdrawn. ✓

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The rejection of Claims 7, 8, 15, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Dalke et al. in view of Hirukawa (U.S. 5,267,286) is respectfully traversed. ✓

~~As explained above~~ Dalke et al. do not describe nor suggest a core plate assembly as recited in Claim 1 nor a core for a nuclear reactor as recited in Claim 9. Accordingly, independent Claims 1 and 9 are patentable over Dalke et al. ✓

Hirukawa describe a fuel assembly having a water cross or water rod arranged between the fuel rods, an inside of the water cross or water rod being divided into a coolant rising passage and a coolant lowering passage, and a control guide tube disposed inside the water cross or water rod and extending along an axial direction of the water cross or water rod. The coolant rising passage has a coolant inlet port formed to a portion above or under a portion at which the fuel rods are supported by the lower tie plate. The control element guide tube has a coolant outlet port formed at that portion so that a coolant introduced into the coolant rising passage flows vertically

upwardly, then turns and flows downwardly along the control element guide tube, and flows into  
an inside thereof through the coolant outlet port. ✓

→ Hirukawa does not describe nor suggest a plurality of fuel supports extending through the  
flat core plate with each fuel support including a coolant flow inlet, a coolant flow outlet sized to  
receive the lower tie plate of a fuel bundle, and a coolant flow bore extending between the  
coolant flow inlet and the coolant flow outlet such that the coolant flow inlet is offset from the  
coolant flow outlet. Rather, Hirukawa describes fuel assembly nozzle 18 that includes a single  
inlet and four outlets. Fuel assembly nozzle attach to a fuel support that is inserted into a control  
rod drive housing. ✓

Applicant submits that Dalke et al. and Hirukawa, alone or in combination, do not  
describe nor suggest a core plate assembly as recited in Claim 1 nor a core for a nuclear reactor  
as recited in Claim 9. Particularly, Dalke et al. and Hirukawa, alone or in combination, do not  
→ describe nor suggest a plurality of fuel supports extending through the flat core plate with each  
fuel support including a coolant flow inlet, a coolant flow outlet sized to receive the lower tie  
plate of a fuel bundle, and a coolant flow bore extending between the coolant flow inlet and the  
coolant flow outlet such that the coolant flow inlet is offset from the coolant flow outlet.

Further, Dalke et al. and Hirukawa, alone or in combination, do not describe nor suggest a  
→ plurality of support beams with the flat core plate positioned on top of the support beams.

Accordingly, Applicant submits that Claims 1 and 9 is patentable over Dalke et al. and  
Hirukawa, alone or in combination. ✓

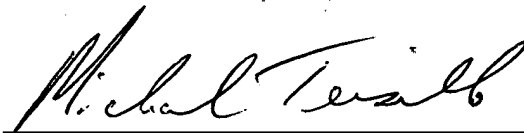
Claims 7 and 8 depend from independent Claim 1 and Claims 15 and 16 depend from  
independent Claim 9. When the recitations of Claims 7 and 8 and Claims 15 and 16 are

considered in combination with the recitations of Claims 1 and 9 respectively, Applicant respectfully submits that Claims 7, 8, 15, and 16 likewise are patentable over Dalke et al. and Hirukawa, alone or in combination. ✓

For the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 7, 8, 15, and 16 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Favorable action is respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink, reading "Michael Tersillo", written over a horizontal line.

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24-AT-5990  
PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Chalberg	:	
	:	Art Unit: 3641
Serial No.: 09/692,135	:	
	:	Examiner: J. Richardson
Filed: October 19, 2000	:	
	:	
For: CORE SUPPORT FOR AN F-LATTICE	:	
CORE OF A BOILING WATER	:	
NUCLEAR REACTOR	:	

**SUBMISSION OF MARKED UP CLAIMS**

Commissioner for Patents  
Washington, D.C. 20231

A marked-up version of amended Claims 1 and 9, in accordance with 37 C.F.R.  
§ 1.121(c)(1)(ii), follows below.

MARKED UP CLAIMS

1. (twice amended) A core plate assembly for a nuclear reactor, the reactor comprising a plurality of [large] control rods, a plurality of cruciform shaped control rod guide tubes, and a plurality of fuel bundles having lower tie plates, said core plate assembly comprising:

a flat plate;  
a plurality of support beams, said flat plate positioned on top of said support beams;  
a plurality of control rod guide tube openings, each said guide tube opening sized to receive a control rod guide tube[, said control rod guide tube openings arranged in staggered rows]; and

a plurality of fuel supports extending through said flat plate, each said fuel support comprising:

a coolant flow inlet;

a coolant flow outlet sized to receive the lower tie plate of a fuel bundle; and

a coolant flow bore extending between said coolant flow inlet and said coolant flow

outlet, said coolant flow inlet offset from said coolant flow outlet so that a centerline of said coolant flow inlet is parallel to a centerline of said coolant flow outlet.

9. (twice amended) A core for a nuclear reactor comprising:

a plurality of fuel bundles, each fuel bundle comprising a lower tie plate;

a plurality of cruciform shaped [large] control rods;

a plurality of cruciform shaped control rod guide tubes; and

a core plate assembly comprising:

a flat plate;

a plurality of support beams, said flat plate positioned on top of said support beams;

a plurality of control rod guide tube openings, each said guide tube opening sized to receive a control rod guide tube[, said control rod guide tube openings arranged in staggered rows]; and

a plurality of fuel supports extending through said flat plate, each said fuel support comprising:

a coolant flow inlet;

a coolant flow outlet sized to receive the lower tie plate of a fuel bundle; and

a coolant flow bore extending between said coolant flow inlet and said coolant flow

outlet, said coolant flow inlet offset from said coolant flow outlet so that a centerline of said coolant flow inlet is parallel to a centerline of said coolant flow outlet.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael Tersillo". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

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